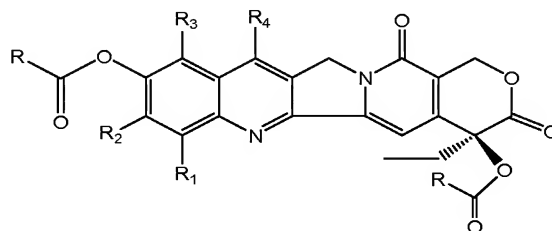


AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

Claims 1-54. (Canceled)

55. (Currently Amended) A di-ester ~~derivative of camptothecin~~ compound having the following ~~general~~ structure:



wherein[[],]

R₁, R₂, R₃, and R₄, which can be the same or different, are hydrogen, halogen, C₁–C₂₀ alkyl, C₁–C₈ alkoxy, C₄–C₂₀ aryl or C₁–C₂₀ silyl,

~~each R₁ which~~ can be the same or different, ~~and~~ is C₂–C₃₀ alkyl, C₂–C₂₂ alkenyl, C₄–C₃₀ aryl, (CH₂)_nOR₅, (CH₂)_nSR₅, (CH₂)_nNR₅R₆ or (CH₂)_nCOR₇,

~~wherein,~~

R₅ and R₆, which can be the same or different, are C₁–C₈ alkyl, or C₂–C₆ alkenyl,

R₇ is hydroxy, C₁–C₂₀ alkyl, C₁–C₆ alkenyl, C₁–C₆ alkoxy, C₄–C₂₀ aryl, or NR₈R₉,

~~wherein,~~

R₈ and R₉, which can be the same or different, are C₁–C₆ alkyl,

and n is an integer of 1 to 8,

or a pharmaceutically acceptable salt thereof.

56. (Currently Amended) A di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~ wherein each R can be the same or different and is C₂–C₂₀ alkyl, C₂–C₆ alkenyl[[],] or C₄–C₂₀ aryl.

57. (Currently Amended) A pharmaceutical composition comprising an effective amount of the ~~camptothecin~~ di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~ and a pharmaceutically acceptable carrier or diluent.

58. (Currently Amended) A pharmaceutical composition comprising an effective amount of the ~~camptothecin~~ di-ester derivative compound of claim 56 ~~or a salt thereof~~ and a pharmaceutically acceptable carrier or diluent.

59. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂, R₃, and R₄ is H, and R is C₂-C₃₀ alkyl.

60. (Currently Amended) The di-ester derivative compound of claim 56, wherein each of R₁, R₂, R₃, and R₄ is H, and R is C₂-C₂₀ alkyl.

61. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂, R₃, and R₄ is H, and R is C₂-C₂₂ alkenyl.

62. (Currently Amended) The di-ester derivative compound of claim 56, wherein each of R₁, R₂, R₃, and R₄ is H, and R is C₂-C₆ alkenyl.

63. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂, R₃ and R₄ is H, and R is (CH₂)_nOR₅, ~~wherein~~, R₅ is C₁-C₆ alkyl[[,]] or C₂-C₆ alkenyl, and n is 1 or 2.

64. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂, R₃ and R₄ is H, and R is (CH₂)_nSR₅, ~~wherein~~, R₅ is C₁-C₆ alkyl, C₂-C₆ alkenyl, or C₄-C₁₀ aryl, and n is 1 or 2.

65. (Currently Amended) The di-ester derivative compound of claim 55 ~~or a salt thereof~~, wherein each of R₁, R₂, R₃ and R₄ is H, and R is (CH₂)_nNR₅R₆, ~~wherein~~, R₅ and R₆ are independently[[,]] C₁-C₆ alkyl[[,]] or C₂-C₆ alkenyl, and n is 1 or 2.

66. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂, R₃ and R₄ is H, and R is (CH₂)_nCOR₇, ~~wherein~~, R₇ is hydroxy, C₁-C₆ alkyl, C₂-C₆ alkenyl[[,]] or C₄-C₁₀ aryl, and n is 2 to 4.

67. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂-C₃₀ alkyl.

68. (Currently Amended) The di-ester derivative compound of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂-C₂₀ alkyl.

69. (Currently Amended) The di-ester derivative compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂-C₂₂ alkenyl.

70. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂–C₆ alkenyl.

71. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₄–C₃₀ aryl.

72. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₄–C₂₀ aryl.

73. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nOR₅, [[wherein,]] R₅ is C₁–C₆ alkyl[[,]] or C₂–C₆ alkenyl, and n is 1 or 2.

74. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nSR₅, [[wherein,]] R₅ is C₁–C₆ alkyl, C₂–C₆ alkenyl, or C₄–C₁₀ aryl, and n is 1 or 2.

75. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 or a salt thereof, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nNR₅R₆, [[wherein,]] R₅ and R₆ are independently, C₁–C₆ alkyl[[,]] or C₂–C₆ alkenyl, and n is 1 or 2.

76. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nCOR₇, [[wherein,]] R₇ is hydroxy, C₁–C₆ alkyl, C₂–C₆ alkenyl[[,]] or C₄–C₁₀ aryl, and n is 2 to 4.

77. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is C₂–C₃₀ alkyl.

78. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is C₂–C₂₀ alkyl.

79. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is C₂–C₂₂ alkenyl.

80. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is C₂–C₆ alkenyl.

81. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is C₄–C₃₀ aryl.

82. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $\text{C}_4\text{-C}_{20}$ aryl.

83. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $(\text{CH}_2)_n\text{OR}_5$ [[;_wherein]], R_5 is $\text{C}_1\text{-C}_6$ alkyl[[,]] or $\text{C}_2\text{-C}_6$ alkenyl, and n is 1 or 2.

84. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $(\text{CH}_2)_n\text{SR}_5$, [[wherein,]] R_5 is $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_2\text{-C}_6$ alkenyl[[,]] or $\text{C}_4\text{-C}_{10}$ aryl, and n is 1 or 2.

85. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 or a salt thereof, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $(\text{CH}_2)_n\text{NR}_5\text{R}_6$, [[wherein,]] R_5 and R_6 are independently, $\text{C}_1\text{-C}_6$ alkyl[[,]] or $\text{C}_2\text{-C}_6$ alkenyl, and n is 1 or 2.

86. (Currently Amended) The di-ester compound of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $(\text{CH}_2)_n\text{COR}_7$, [[wherein,]] R_7 is hydroxy, $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_2\text{-C}_6$ alkenyl[[,]] or $\text{C}_4\text{-C}_{10}$ aryl, and n is 2 to 4.

87. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_2\text{-C}_{30}$ alkyl.

88. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_2\text{-C}_{20}$ alkyl.

89. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_2\text{-C}_{22}$ alkenyl.

90. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_2\text{-C}_6$ alkenyl.

91. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_4\text{-C}_{30}$ aryl.

92. (Currently Amended) The di-ester ~~derivative~~ compound of claim 56 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $\text{C}_4\text{-C}_{20}$ aryl.

93. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(\text{CH}_2)_n\text{OR}_5$, [[wherein,]] R_5 is $\text{C}_1\text{--C}_6$ alkyl[[,]] or $\text{C}_2\text{--C}_6$ alkenyl, and n is 1 or 2.

94. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(\text{CH}_2)_n\text{SR}_5$, [[wherein,]] R_5 is $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_2\text{--C}_6$ alkenyl[[,]] or $\text{C}_4\text{--C}_{10}$ aryl, and n is 1 or 2.

95. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(\text{CH}_2)_n\text{NR}_5\text{R}_6$, [[wherein,]] R_5 and R_6 are independently, $\text{C}_1\text{--C}_6$ $\text{C}_1\text{--C}_6$ alkyl[[,]] or $\text{C}_2\text{--C}_6$ alkenyl, and n is 1 or 2.

96. (Currently Amended) The di-ester ~~derivative~~ compound of claim 55 ~~or a salt thereof~~, wherein R_1 is $\text{CH}_2\text{N}(\text{CH}_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(\text{CH}_2)_n\text{COR}_7$, [[wherein,]] R_7 is hydroxy, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_2\text{--C}_6$ alkenyl[[,]] or $\text{C}_4\text{--C}_{10}$ aryl, and n is 2 to 4.

97. (Currently Amended) A method to inhibit the enzyme topoisomerase I in an animal in need thereof comprising administering to the animal an effective amount of a composition comprising at least one di-ester ~~derivative~~ compound of claim 55.

98. (Currently Amended) A method to inhibit the enzyme topoisomerase I in an animal in need thereof comprising administering to the animal an effective amount of a composition comprising at least one di-ester ~~derivative~~ compound of claim 56.

99. (Currently Amended) A method to treat cancer in a patient comprising administering a composition comprising at least one di-ester ~~derivative~~ compound of claim 55 to said patient in an ~~effective~~ amount effective to treat said cancer.

100. (Currently Amended) A method to treat cancer in a patient comprising administering a composition comprising at least one di-ester ~~derivative~~ compound of claim 56 to said patient in an ~~effective~~ amount effective to treat said cancer.

101. (Previously Presented) The method of claim 99, wherein said cancer is lung, breast, colon, prostate, melanoma, pancreas, stomach, liver, brain, kidney, uterus, cervix, ovaries, urinary tract, gastrointestinal, or leukemia.

102. (Previously Presented) The method of claim 100, wherein said cancer is lung, breast, colon, prostate, melanoma, pancreas, stomach, liver, brain, kidney, uterus, cervix, ovaries, urinary tract, gastrointestinal, or leukemia.

103. (Previously Presented) The method of claim 99, wherein said cancer is solid tumor or blood borne tumor.

104. (Previously Presented) The method of claim 100, wherein said cancer is solid tumor or blood borne tumor.

105. (Previously Presented) The method of claim 99, wherein said composition is administered orally, parenterally, intramuscularly, transdermally or by an airborne delivery system.

106. (Previously Presented) The method of claim 100, wherein said composition is administered orally, parenterally, intramuscularly, transdermally or by an airborne delivery system.

107. (Currently Amended) The method of claim 99, wherein said composition is a nanoparticle containing said at least one di-ester of ~~camptothecin~~ camptothecin compound.

108. (Currently Amended) The method of claim 100, wherein said composition is a nanoparticle containing said at least one di-ester of ~~camptothecin~~ camptothecin compound.